Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HISASHI HONDA

Appeal No. 2000-1324
Application No. 08/649,487

ON BRIEF

Before KRASS, RUGGIERO, and GROSS, Administrative Patent Judges.
GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 17 and 18, which are all of the claims pending in this application.

Appellant's invention relates to a luminaire with a photo catalytic layer formed on the outer surface thereof for absorbing ultraviolet radiation produced by the light source within the luminaire and for decomposing malodorous sources and dust particles and the like. The photo catalytic layer is 0.01 to 0.3 microns thick and is formed of anatase form of titanium oxide.

Claim 17 is illustrative of the claimed invention, and it reads as follows:

17. A lighting apparatus comprising:

a luminaire having a light-transmitting portion;

a light source housed in the luminaire, the light source radiating ultraviolet rays having a wavelength below 410 nm;

a photo catalytic layer provided on an outer surface of the light-transmitting portion, the photo catalytic layer substantially including anatase form of titanium oxide and having a thickness of 0.01 to 0.3 microns; and

wherein the light source is housed in the luminaire so that the light source irradiates an inner surface of the light-transmitting portion and the catalytic layer receives the ultraviolet rays having at least 0.01 nW/cm^2 intensity through the light-transmitting portion.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Taoda et al. (Taoda)	5,650,126	Jul. 22, 1997 (filed Sep. 25, 1995)
Akira et al. (Akira)[1]	JP 7-111104 (Japanese Kokai)	Apr. 25, 1995

Claims 17 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Akira in view of Taoda.

Reference is made to the Examiner's Answer (Paper No. 19, mailed November 15, 1999) for the examiner's complete reasoning

[1] The examiner refers to this reference as Fujishima, Akira's first name. We will use the last name of Akira. Further, our understanding of this reference is based upon a translation provided by the Translations Branch of the Patent and Trademark Office, a copy of which is attached to this decision.

in support of the rejection, and to appellant's Brief (Paper No. 15, filed May 25, 1999), Supplemental Brief (Paper No. 18, filed September 24, 1999), and Reply Brief (Paper No. 20, filed January 14, 2000) for appellant's arguments thereagainst.

OPINION

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellant and the examiner. As a consequence of our review, we will reverse the obviousness rejection of claims 17 and 18.

Independent claim 17 recites, in pertinent part, "a photo catalytic layer provided on an outer surface of the light-transmitting portion [of the luminaire]" (underlining ours for emphasis). Although Akira clearly states (e.g., Translation page 6) that the titanium oxide or photo catalytic layer is formed on the inner surface of the cover component of the lighting system, the examiner contends (Answer, pages 4-5) that "[i]t would have been obvious to have a layer inside or outside of the transmitting portion, since this would fall withing [sic] the routine design capabilities of the artisan."

The examiner has clearly overlooked the explicit teaching of Akira (Translation, page 6) that "[t]he semiconductor is directly irradiated by the light emitter because it (the semiconductor)

adheres to the inner surface of the cover component, which thereby allows an effective photocatalytic reaction to ensue." Modifying Akira's lighting device to include the photo catalytic layer on the outside surface would destroy the purpose of the invention. The Federal Circuit has held that "a proposed modification [is] inappropriate for an obviousness inquiry when the modification render[s] the prior art reference inoperable for its intended purpose." ***In re Fritch***, 23 USPQ2d 1780, n. 12, *citing* ***In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Accordingly, it would not have been obvious to the skilled artisan to modify Akira's lighting device to have the photo catalytic layer on the outside surface.

The examiner further asserts (Answer, page 5) that:

> It would have been an expedient of an artisan to use layer on outside or inside of the transmitting portion, since applicant has not disclosed that layer on the outside surface solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with layer on the inside surface.

However, appellant (throughout the specification) discloses forming the photo catalytic layer on the outer surface to decompose materials attached to the surface of the luminaire such as sources of bad smells and dust, nicotine or oil stains, while still absorbing harmful ultraviolet radiation.

Also, the examiner states (Answer, page 6) that "to use a titanium oxide layer in a luminaire for deodorizing purpose, he/she [the artisan] must have to coat such layer on the glass globe since the lamp 61 is housed in the globe 63. If artisan coats the lamp 61 . . ., it would serve no purpose." However, as pointed out by appellant (Reply Brief, page 2), the examiner has failed to appreciate how Akira's device accomplishes its deodorizing function. Akira discloses (Translation, pages 10-11):

> The air in the cover component (3) becomes heated at this time, and is discharged to the outside from the gas discharge aperture (3B). Fresh air simultaneously flows in from the outside through the influx aperture (3A) therein (3). The odoriferous and harmful gases flow into the cover component (3) along with the air, are rendered odorless and harmless by the photocatalytic reaction, and discharged to the outside. Orderly repetition of this process purifies the entire room interior space and other enclosed places.

Thus, contrary to the examiner's assertions, the titanium oxide layer does not need to be on the outside of the luminaire for deodorizing purposes, as Akira clearly discloses a device which accomplishes such functions with the photo catalytic layer on the inner surface of the luminaire. Therefore, the examiner has failed to provide appropriate evidence or a convincing line of reasoning to establish a *prima facie* case of obviousness.

Consequently, we cannot sustain the rejection of claim 17 or claim 18, dependent therefrom.

CONCLUSION

The decision of the examiner rejecting claims 17 and 18 under 35 U.S.C. § 103 is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	)	
JOSEPH F. RUGGIERO Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)	

apg/vsh

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